CLAIMS

Having thus described several embodiments, the present invention is now claimed to be:

1. A method for allocating at least one shared radio resource within a communication system including at least one base station adapted to manage data service access requests, the method comprising:

a) determining whether a number of existing data service access requests exceeds the number of shared radio resources;

b) servicing each of the existing data service access requests on a first-in-highest-priority basis when the number of existing data service access requests does not exceed the number of shared radio resources;

c) assigning a priority value to each of the existing data service access requests when the number of existing data service access requests exceeds the number of shared radio resources;

d) servicing each of the existing data service access requests based on the respective priority values assigned thereto; and

e) adjusting the priority value assigned to each of the existing data service access requests when a new data service access request is received.

2. The method of claim 1, further including:

f) servicing each of the existing data service access requests based on adjusted priority values determined in e).

3. The method of claim 1, wherein d) includes allocating a predetermined number of data frames to be transmitted for each data service access request that is serviced.

4. The method of claim 1, wherein d) includes allocating a predetermined time period in which to transmit data frames for each data service access request that is serviced.

5. The method of claim 1, wherein d) includes servicing a first plurality of existing data service access requests on a first-in-highest-priority basis when the priority values for the first plurality of existing data service access requests are the same.

6. The method of claim 1, wherein c) includes assigning a frame count value to each of the existing data service access requests when the number of existing data service access requests exceeds the number of shared radio resources.

7. The method of claim 6, wherein e) includes incrementing a frame count value for a first data service access request based on the number of data frames transmitted.

8. The method of claim 1, wherein d) includes servicing each of the plurality of existing data service access requests based on a frame count value assigned to each of the existing data service access requests.

9. The method of claim 8, wherein d) further includes granting priority to an existing data service access request with a lowest frame count value.

10. The method of claim 1, wherein a) includes determining whether a plurality of existing data service access requests exceeds a number of shared supplemental channels.

11. The method of claim 1, wherein e) includes adjusting a frame count value for an existing data service access request according to the equation $FC_{adj} = FC - B$, where FC_{adj} is an adjusted frame count value for the existing data service access request, FC is a present frame count value for the existing data service access request, and B is an average of the frame count values for each of the existing data service access requests.

12. The method of claim 1, wherein c) includes determining a priority value for an existing data service access request based on at least one resource priority parameter from the group consisting of frame count, transmission time, number of data frames queued, signal-to-noise ratio, FER, BER, transmission delay, and jitter.

13. An apparatus for allocating at least one shared radio resource within a wireless communication system including at least one base station adapted to manage data service access requests, the apparatus comprising:

at least one supplemental channel circuit, each supplemental channel circuit corresponding to one shared radio resource;

a summer for combining forward link data frames received from the plurality of supplemental channel circuits;

a modulator for modulating a summer output signal to be transmitted to at least one wireless subscriber devices

and

a controller programmed to:

a) determine whether a number of existing data service access requests exceeds the number of shared radio resources;

b) service each of the existing data service access requests on a first-in-highest-priority basis when the number of existing data service access requests does not exceed the number of shared radio resources;

c) assign a priority value to each of the existing data service access requests when the number of existing data service access requests exceeds the number of shared radio resources;

d) service each of the existing data service access requests based on the respective priority values assigned thereto; and

e) adjust the priority value assigned to each of the existing data service access requests when a new data service access request is received.

14. The apparatus of claim 13, wherein the controller is further programmed to

f) service each of the existing data service access requests based on adjusted priority values determined in e).

15. The apparatus of claim 13, wherein under d), the controller is further programmed to allocate a predetermined number of data frames to be transmitted for each data service access request that is serviced.

16. The apparatus of claim 13, wherein under d), the controller is further programmed to allocate a predetermined time period in which to transmit data frames for each data service access request that is serviced.

17. The apparatus of claim 13, wherein under d), the controller is further programmed to service a first plurality of existing data service access requests on a first-in-highest-priority basis when the priority values for the first plurality of existing data service access requests are the same.

18. The apparatus of claim 13, wherein under c), the controller is further programmed to assign a frame count value to each of the existing data service access requests when the number of existing data service access requests exceeds the number of shared radio resources.

19. The apparatus of claim 18, wherein under e), the controller is further programmed to increment a frame count value for a first data service access request based on the number of data frames transmitted.

20. The apparatus of claim 13, wherein under d), the controller is further programmed to service each of the plurality of existing data service access requests based on a frame count value assigned to each of the existing data service access requests.

21. The apparatus of claim 20, wherein under d), the controller is further programmed to grant priority to an existing data service access request with a lowest frame count value.

22. The apparatus of claim 13, wherein under a), the controller is further programmed to determine whether a plurality of existing data service access requests exceeds a number of shared supplemental channels.

23. The apparatus of claim 13, wherein under e), the controller is further programmed to adjust a frame count value for an existing data service access request according to the equation $FC_{adj} = FC - B$, where FC_{adj} is an adjusted frame count value for the existing data service access request, FC is a present frame count value for the existing data service access request, and B is an average of the frame count values for each of the existing data service access requests.

24. The apparatus of claim 13, wherein under c), the controller is further programmed to determine a priority value for an existing data service access request based on at least one resource priority parameter from the group consisting of frame count, transmission time, number of data frames queued, signal-to-noise ratio, FER, BER, transmission delay, and jitter.

25. A method for data transmission within a broad-band communications system, the method comprising:

a) initializing parameters utilized in performing resource scheduling and allocation within a base station;

b) determining that one or more users have requested and been granted access to resources within the base station for transmission of data;

c) determining whether resources within the base station are immediately available to handle each data service user granted access to resources for transmission of data;

d) when sufficient resources are available to handle each data service user,

i) scheduling resources to data service users with priority to users granted access to resources first, and

ii) allocating usage of assigned resources based on a maximum allocation parameter; and

e) when sufficient resources are not available to handle each data service user,

i) computing a scheduling priority value for each data service user using a resource scheduling function,

ii) scheduling resources to data service users with priority based on the resource scheduling function, and

iii) allocating usage of assigned resources based on a maximum allocation parameter.